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Remarks

Claims 1-30 remain in the application.

The Examiner has rejected claims 1 and 8-10 under 35 U.S.C. §103(a) as being obvious over Niemirowski et al. (US Patent 6,056,123, hereafter Niemirowski) in view of Hewitt (US Patent 4,504,224) and Beyaert et al. (US Patent 6,361,313). This rejection is traversed. Hewitt is non-pertinent art arising in the field of pottery which is not combinable with art in the field of semiconductor processing of the other two references and of the present invention. There is a two-part test for relevant art according to *Shatterproof Glass Corp. v. Libbey-Owens Ford Co.*, 225 USPQ 634, 638 (Fed. Cir., 1985). Look first at the field of the inventor's endeavor. If the reference is not within the field of the inventor's endeavor, one looks at whether the field of the reference is reasonably pertinent to the problem the inventor is trying to solve." Clearly, pottery and silicon integrated circuits are not within same field of endeavor. The two fields are based in separate factories and rely upon different levels and types of education of their developmental staffs. Furthermore, the field of pottery is not pertinent to the problem the inventor is trying solve, which is fabricating long support fingers in a material (silicon) that is difficult to machine and providing a close spacing of the fingers to maximize the number of wafers being processed. The sloping fingers of the claims can be machined in a single setting of a slotter or cutting wheel and the small horizontal support areas can then be machined by a single setting of the cutting wheel or other polishing mechanism. In contrast, the kiln furniture of Hewitt and presumably other prior art in the pottery field are not made of silicon or other high-purity materials such as fused quartz and silicon carbide. No reasonable engineer attempting to improve on semiconductor support towers would look into the field of pottery kilns to investigate adopting some practices of potters. Pottery kiln furniture is not reasonably pertinent to any problem that a semiconductor processing engineer is trying to solve, particularly an engineer working with silicon towers of the invention, Niemirowski, or Bayaert.

Stated differently, ordinary mechanics in the field of thermal batch processing of integrated circuits reading the prior art of Niemirowski and Beyaert are unlikely to consult the

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prior art of pottery kilns, which art produces particulates far in excess of the minimum levels needed for integrated circuits.

In any case, it is unobvious to substitute the triangular pins of Hewitt for the rails 5 of Niemirowski or the divider 13' of Bayaert. Both Niemirowski and Bayaert use teeth that are integral with their legs. Hewitt at col. 2, lines 51-56 explains that the shape and slope of his pins 24 causes the pins 24 to support the flatware at point contacts, thereby minimizing the visible contact point in the glazed surface on the bottom of the flatware. There is no comparable need to minimize the contact area on the back side of semiconductor wafers. Indeed, several of the claims require increasing the area of contact with horizontal support surfaces. Niemirowski apparently provides a large contact area while Bayaert already provides a minimum contact at his contact corner S' in FIG. 4B. The simple inclined form of Hewitt's pins is probably dictated by their need to be replaced after each firing (col. 2, lines 57-61) and hence the need for them to be simple and inexpensive while providing point contact.

It is possible that Hewitt's replaceable triangular pins could be substituted in the silicon tower of Niemirowski, but there is no suggestion for it and the combination is not read upon by the claims. There is simply no suggestion in the art for the advantages of substituting Hewitt's pins or their shape into the prior art of Niemirowski and Bayaert.

Yet further, the prior art simply fails to teach teeth cut into legs having both upper and lower surfaces at 1° to 3°. Hewitt's teeth don't have parallel upper and lower surfaces. Bayaert's teeth are inclined only on one side. Niemirowski's teeth are not inclined. The claimed invention provides for easily machinable and closely spaced support teeth.

As for method claim 10, the applied art fails to disclose cutting inclined parallel slots.

The Examiner has rejected claims 4, 7, and 13 under 35 U.S.C. §103(a) as being obvious over Niemirowski/Hewitt/Beyaert and further in view of Ohsawa (US Patent 6,033,215). This rejection is traversed. First, these claims depend from a claim believed to be in allowable form. Secondly, the only reason Hewitt provides for the inclination of his pins is to provide a point contact with the flatware being fired and glazed to minimize visible pits in the glazing. Oppositely, Ohsawa teaches the advantages of a flat extended support surface. The Examiner needs to pick which teaching he is using and adapt the teaching as a whole instead of selectively

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combining only parts of the teachings.

The Examiner has rejected claim 5 under 35 U.S.C. §103(a) as being obvious over Niemirowski/Hewitt/Beyaert/Ohsawa and further in view of Ballance et al.(US Patent 6,395,363, hereafter Ballance). This rejection is traversed. First, this claim depends upon a claim believed to be in allowable form. Secondly, Ballance's teaching at col. 5, lines 50-59 of a polished surface is applied to a sloping surface 200 of FIG. 4 not a horizontally extending support surface as defined in parent claim 4. Ballance's sloping surface contacts only the edge of the wafer while the claimed polished surface touches an extended area on the back of the wafer or other supported substrate.

The Examiner has rejected claim 6 under 35 U.S.C. §103(a) as being obvious over Niemirowski/Hewitt/Beyaert/Ohsawa and further in view of Wingo (US Patent 6,171,400). This claim depends from a claim believed to be in allowable form and should therefore also be allowable.

The Examiner has rejected claims 14, 15, 17-20, 22, 24, 25, and 27-29 as being obvious over Niemirowski in view of Hewitt, Beyaert and Ohsawa and further in view of Wingo. This rejection is traversed. Claims 14 and 24 recite in some detail a support tower of the invention and is narrower than claim previously argued. The unobvious use of the Hewitt reference in combination with the semiconductor art of the other references has already been asserted. The art simply fails to suggest support teeth having parallel surfaces inclined at 1° to 3°.

The Examiner has rejected claims 21 and 30 under 35 U.S.C. §103(a) as being obvious over Niemirowski/Hewitt/Beyaert/Ohsawa and further in view of Wingo. These claims depend from claims believed to be in allowable form and should therefore also be allowable.

The Examiner has rejected claim 23 under 35 U.S.C. §103(a) as being obvious over Niemirowski/Hewitt/Beyaert/Ohsawa and further in view of Ballance. This rejection is traversed. The unobvious use of Ballance for polishing horizontally extending support surfaces has already been asserted.

The Examiner objects to claims 2, 3, 11, 12, and 26 as being dependent upon a rejected base claim but would otherwise allow them. Applicants believe they are entitled to broader claims not requiring virgin polysilicon so that these claims remain in allowable form.

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In view of the above remarks, consideration and allowance of all claims are respectfully requested. If the Examiner believes that a telephone interview would be helpful, he is invited to contact the undersigned attorney at the listed telephone number, which is on California time.

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Respectfully submitted,



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